



NORTH SEA REGION ELECTRIC MOBILITY NETWORK

e-mobility **NSR**

Experiences from the Norwegian – Swedish cooperation on electric vehicle infrastructure

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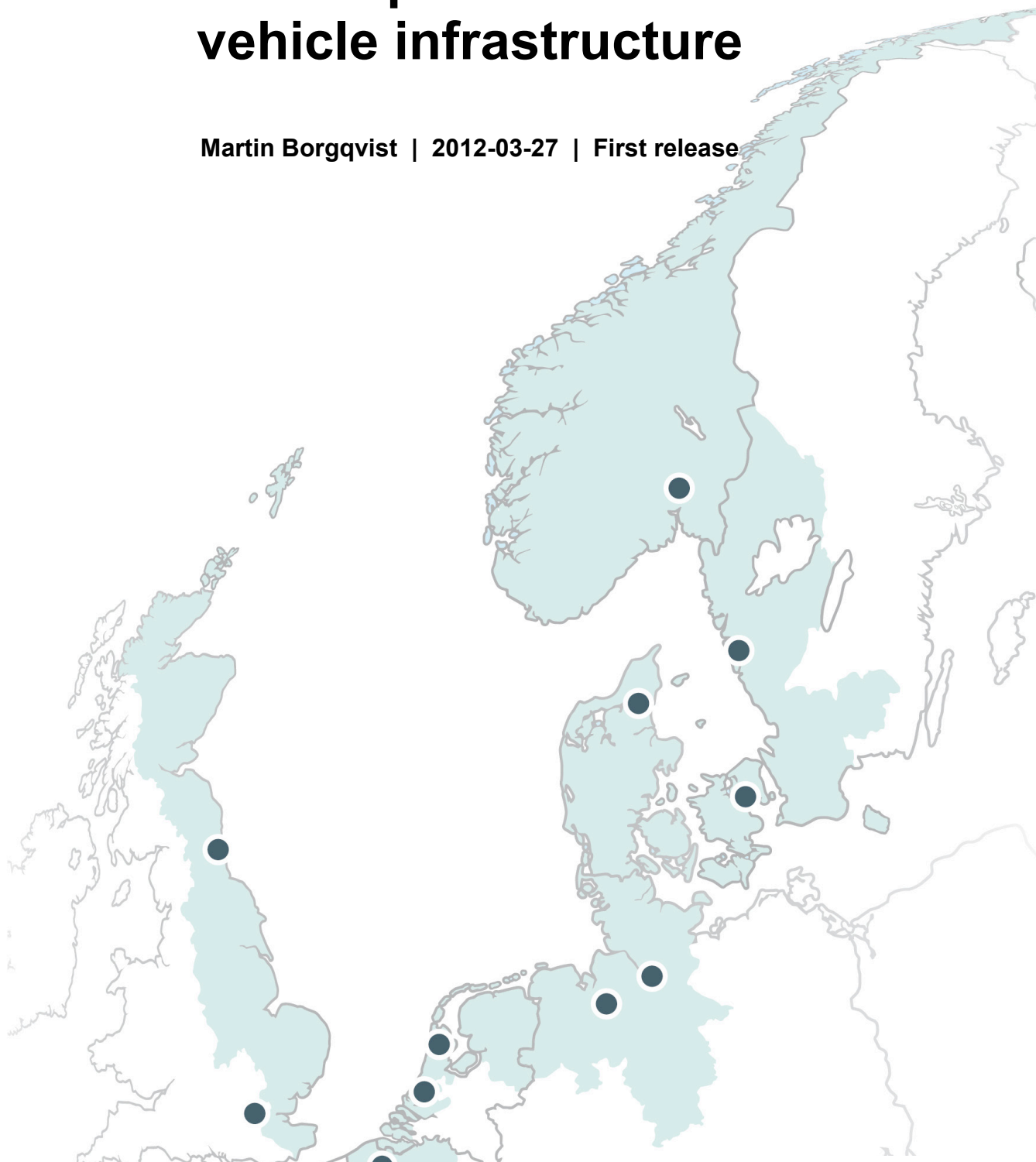


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Summary

This report gives a brief summary on experiences and outcomes from a bilateral cooperation between Norway and Sweden regarding electric vehicle infrastructure and could serve as a background document for future similar collaborations. The information stated in the report originates from documentation from the cooperation project work group, of which the author was a member in 2010. As the cooperation is ongoing, information on future activities are subject to change.

In the beginning of 2010 the Norwegian and Swedish governments decided to mandate a number of agencies and organisations to participate in a cooperation, where the main task was to plan and implement a joint project on charging infrastructure for electric cars. The goal was to make it easier to travel with electric cars between Norway and Sweden. A work group was formed consisting mainly of agencies and convened by the Swedish Energy Agency. A number of meetings within the work group were held during 2010 and a joint cooperation project consisting of the following areas was defined:

- Road signs for directions to and indication of charge spots
- Efforts to establish two demonstration paths for electric vehicles along highways
- Common evaluation of charge infrastructure
- Monitoring of standards and safety issues
- Availability to charge infrastructure and debiting systems that functions on both sides of the boarder

The purpose of the project was to cooperate within the identified areas and also to stimulate activities and new projects within each area. The possibility to harmonise certain policies was also investigated.

The bilateral cooperation has stimulated several spin-off activities and new projects, e.g. an infrastructure project along the road E6 between Oslo and Göteborg as well as a project mapping charge spots within the Nordic countries.

1 Introduction

1.1 Background

In the beginning of 2010 the Norwegian and Swedish governments decided to mandate a number of agencies and organisations to participate in a joint cooperation, where the main task was to plan and implement a joint project on charging infrastructure for electric cars. The goal was to make it easier to travel with electric cars between Norway and Sweden. The term charge infrastructure included charge spots, road signs, parking places etc. Evaluation of technologies such as fast charging was identified as a possible part of the project.

1.2 Work group

The agencies and organisations that were summoned to join the cooperation work group are presented in Table 1; the Swedish Energy Agency was the convenor. A number of meetings with the partners were held during 2010 in which a joint cooperation project was defined.

<p>Norway <u>The Norwegian Public Roads Administration</u></p> <p>The administration is responsible for the planning, construction and operation of the national and county road networks, vehicle inspection and requirements, driver training and licensing.</p> <p><u>Transnova</u></p> <p>Transnova is operating as a trial funding program focusing on, testing, standardisation, pilot projects and demonstration projects with the goal to reduce greenhouse gas emissions from transport.</p> <p><u>The Norwegian Water Resources and Energy Directorate (NVE)</u></p> <p>NVE's mandate is to ensure an integrated and environmentally sound management of the country's water resources, promote efficient energy markets and cost-effective energy systems and contribute to efficient energy use.</p>	<p>Sweden <u>The Swedish Energy Agency</u></p> <p>The Swedish Energy Agency is a government agency for national energy policy issues, which operates in various sectors of society to create conditions for an efficient and sustainable energy use and a cost-effective Swedish energy supply.</p> <p><u>The Energy Markets Inspectorate</u></p> <p>The Energy Markets Inspectorate supervises the Swedish electricity, natural gas and district heating markets. The Inspectorate works for an improvement of the functioning and efficiency of these markets.</p> <p><u>The Swedish Transport Administration</u></p> <p>The administration is responsible for all modes of traffic: traffic on roads and railways, on the sea and in flight. They also build, maintain, and operate all national roads and railways.</p> <p><u>The Swedish Transport Agency</u></p> <p>The Agency has the overall responsibility</p>
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	<p>for drawing up regulations and ensuring that authorities, companies, organisations and citizens abide by them.</p> <p><u>Test Site Sweden (TSS)</u></p> <p>TSS is a Swedish national cooperation program focused on test and demonstration of new vehicle technology. The stakeholders are Swedish automotive OEMs, academics and authorities. TSS is facilitated by Lindholmen Science Park AB in Göteborg.</p>
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Table 1, Project partners

2 The cooperation project

The work group identified the following areas to focus on in a joint cooperation project:

- Road signs for directions to and indication of charge spots
- Efforts to establish two demonstration paths for electric vehicles along highways
- Common evaluation of charge infrastructure
- Monitoring of standards and safety issues
- Availability to charge infrastructure and debiting systems that functions on both sides of the boarder

The purpose of the cooperation project was to cooperate within the identified areas and also to stimulate activities and new projects within each area. The possibility to harmonise certain policies was also investigated. All but one area of cooperation is described in more detail below.

2.1 Road signs for directions to and indication of charge spots

In 2010 the Swedish government gave the Transport Agency the assignment to deliver a proposal on constitutional amendments that would make it possible to reserve specific parking spaces for electric cars and plug-in hybrids. The Transport Agency made a proposal that was presented in May 2010. Among other things the Agency proposed to introduce a new symbol “charge spot” that indicates a place for charging of electric vehicles. The symbol is shown in Figure 1. The Swedish Transport Agency and The Norwegian Public Roads Administration cooperate on the topic of joint symbols and road signs for electric vehicles in Sweden and Norway, with the purpose of using the same symbols.

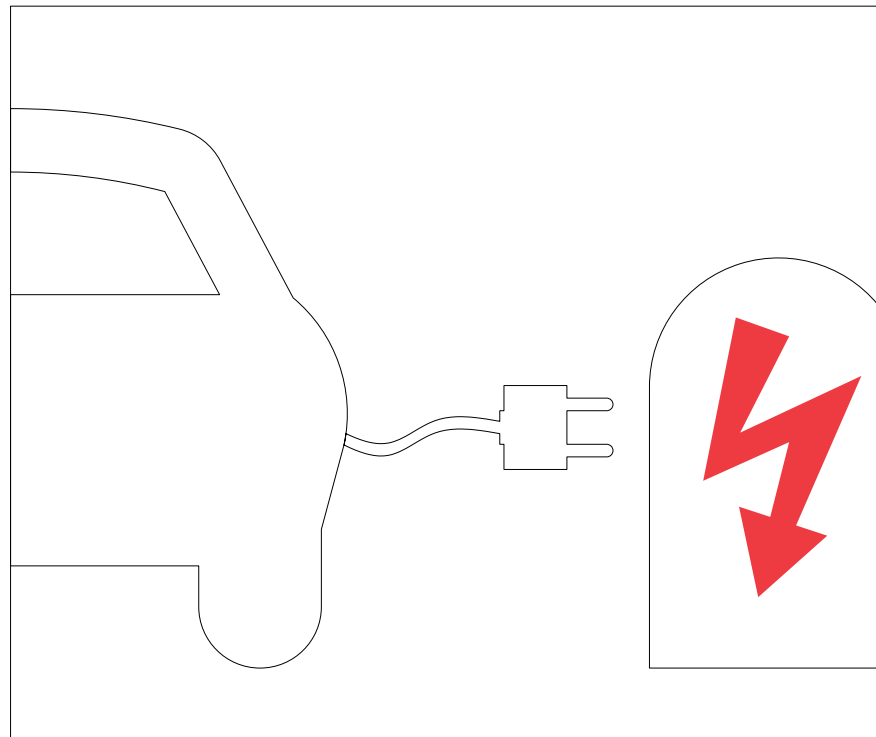


Figure 1, Symbol for charge spot

2.2 Demonstration roads for charge infrastructure

The work group identified two roads suitable for demonstration of electric vehicle infrastructure:

1. The part of road E6 running between Oslo in Norway and Göteborg in Sweden.
 - a. E6 is the road that connects Norway with the European main land and also one of Sweden's most important highways. Many Norwegian tourists travel along E6 to Swedish boarder towns for shopping.
2. Road E14 running between Sundsvall in Sweden and Trondheim in Norway.
 - a. Along this road a Swedish – Norwegian cooperation called Green Highway already exists. Green Highway has the vision of becoming a fossil fuel free transport corridor that contributes to the sustainable development in the region¹.

The locations of both road parts are presented in Figure 2.

¹ <http://greenhighway.nu/>

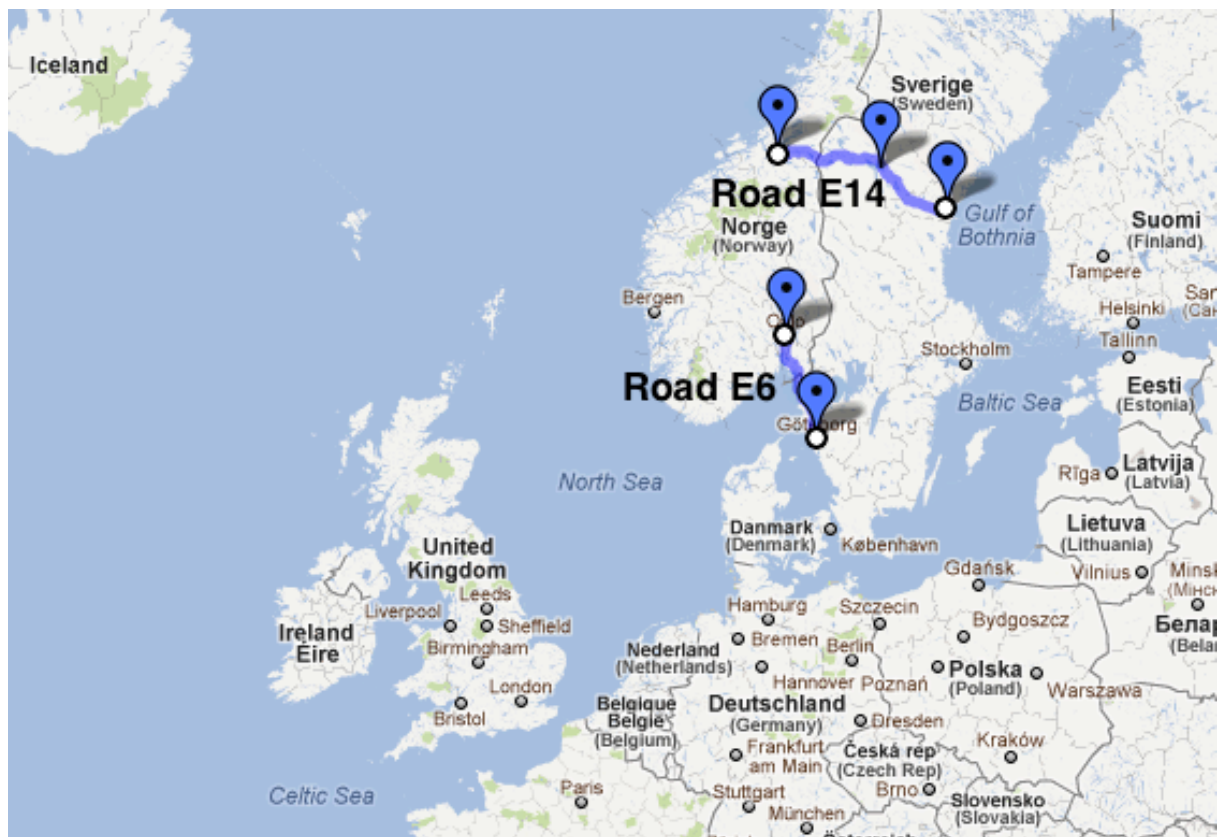


Figure 2, Location of possible demonstration roads

In order to discuss possible demonstration activities along the roads, get an update on ongoing activities and identify how the agencies could support the charge infrastructure development, a workshop was arranged on 2010-09-29 at Lindholmen Science Park. Representatives attended the workshop from municipalities and utility companies along the roads, Swedish and Norwegian agencies, consultants, charge infrastructure suppliers and electric vehicle associations.

2.2.1 Green Highway

Along E14, Green Highway is the platform for transnational cooperation on e-mobility in the region. A number of activities exist and new ones are continuously being developed and implemented.

Key stakeholders for e-mobility activities along Green Highway are Jämtkraft (utility company) Östersund, Sundsvall and Trondheim municipalities. The participating organisations are running a number of e-mobility test fleets in different locations. However, two examples on transnational e-mobility activities are:

- Establishment of charge infrastructure, Figure 3 shows a map of existing charge spots (of different types) along Green Highway. It should be noted that other fuel infrastructure also exist along the road, e.g. bio gas, E85 and RME. Plans on installing fast chargers along E14 exist (tests have already been conducted in Östersund).

- Zero rally 2012 (June 14-16), which is an annual rally for zero- and low emission cars (electric cars, hydrogen cars, plug-in hybrids, hybrid electric vehicles and bio fuel cars).

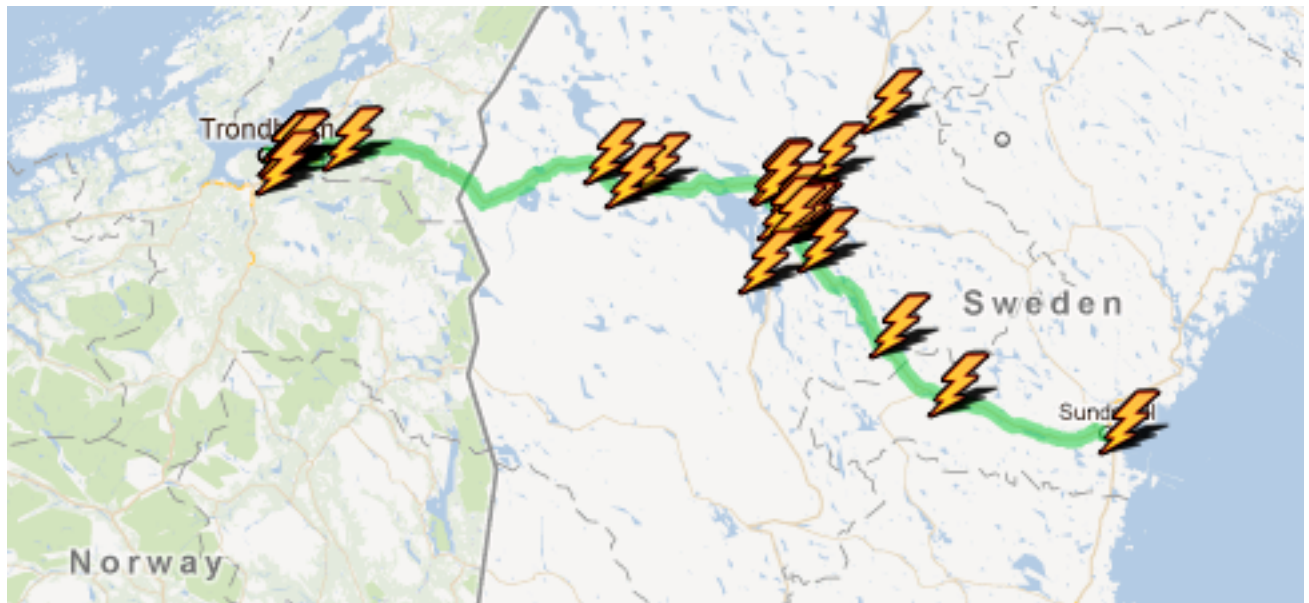


Figure 3, Charge spots along Green Highway (Source: http://www.greenhighway.nu/index.php?option=com_gmapspro2&task=viewmap&mapid=1&controller=maps&Itemid=22)

2.2.2 E6 Oslo – Göteborg

The cooperation work group wanted to stimulate a demonstration project for electric vehicle infrastructure along E6 from Oslo to Göteborg. Such a project (e.g. like Green Highway) requires a lead organisation with the mandate to operate along the whole part of the demonstration road (e.g. municipalities, authorities etc). It was believed that one potential lead partner could be the Göteborg – Oslo collaboration that was launched in 1995. The collaboration aims to strengthen the regions development possibilities and attractiveness by increased political support, lobbying etc. Among other things it deals with infrastructure development and communications with a focus on railway. In 2010 – 2011 the Göteborg – Oslo collaboration secretariat did not deal with any specific e-mobility project similar to Green Highway. However, in 2011 the County Administrative Board of Västra Götaland took an initiative for a project focused on sustainable transport and e-mobility in the region between Oslo and Göteborg, the project was referred to as “EL6”².

2.3 Common evaluation of charge infrastructure

Joint evaluation of charging infrastructure between the two countries gives a larger amount of data. The work group proposed that common survey questionnaires should be used in evaluation projects in both Norway and Sweden. Also, the goal of collecting the same type of data in the two countries was set.

² „El“ is the Swedish word for electricity.

2.4 Availability to charge infrastructure and debiting systems that functions on both sides of the boarder

Transnova has funded the development of a database on charge spots in Norway (www.nobil.no). The actors that have made the installations report the relevant data on the charge spots to the database. Transnova has funded a modification of the database for the inclusion of Swedish charge spots as well. Another project that aims at mapping charge spots in the Nordic countries has also been launched.

A similar payment system for charging would make it easier to travel between Norway and Sweden with electric vehicles. In Norway it is possible for a charge spot provider to charge for the electricity **without** mark up. In Sweden such an arrangement would require changes in the law. The Energy Markets Inspectorate in Sweden has proposed an except from the network license requirement for electric grids that are reserved for recharging electric vehicles. This would mean that it would be possible for actors other than the grid operator to sell electricity to electric vehicles. The proposal is under treatment within the cabinet office. In Norway most charge spots can be used for free and another way to get paid for charging services is to include the cost of electricity in the parking fee.

3 Future work

The work group has proposed a continuation of the collaboration throughout 2012. The focus for the continued work is:

- Consistent information to electric car users in Norway and Sweden
- Collaboration on safety and availability of charge spots
- Joint demonstrations and assessments of electric car use

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NORTH SEA REGION ELECTRIC MOBILITY NETWORK

e-mobility NSR

About E-Mobility NSR

The Interreg North Sea Region project North Sea Electric Mobility Network (E-Mobility NSR) will help to create favorable conditions to promote the common development of e-mobility in the North Sea Region. Transnational support structures in the shape of a network and virtual routes are envisaged as part of the project, striving towards improving accessibility and the wider use of e-mobility in the North Sea Region countries.

www.e-mobility-nsr.eu

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